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CONTRIBUTION TO A KNOWLEDGE OF PAPUAN TIPULIDAE
(DIPTERA).

By CHARLES P. ALEXANDER, Massachusetts State College, Amherst, Mass., U.S.A.

(Communicated by Frank H. Taylor, F.R.E.S., F.Z.S.)

(Seven Text-figures.)

[Read 24th June, 1936.]

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The material included in the present paper is chiefly from the mountains of the Central Division of Papua north of Port Moresby, and was collected by Mr. K. J. Clinton of the School of Public Health and Tropical Medicine, The University of Sydney. The collection contained eight species, six being described as new. The subgenus *Paramongoma* is recorded for the first time from Papua. I express my very sincere thanks to Professor Harvey Sutton, Director of the School of Public Health and Tropical Medicine, for submitting this material to me for study. All types and uniques are preserved in the collection of the School.

LIMONIINAE.

LIMONIINI.

LIMONIA (LIMONIA) LONGEANTENNATA, n. sp. Figs. 1, 3.

Size small (wing, ♂, 4 mm.); general coloration of thorax dark brown, the praescutum more reddish-brown; femora yellow, with a narrow, subterminal, dark ring; wings with a uniform brown tinge, the stigma very small, subcircular in outline; male terminalia with the basistyle armed at tip with three groups of modified setae; dististyle profoundly divided into a dusky clavate outer lobe and an oval inner lobe that is produced into a slender spinous point.

♂. Length about 3.5 mm.; wing, 4 mm.; antenna about 2.7 mm.

Rostrum black, about one-third the length of remainder of head; palpi black. Antennae (♂) of unusual length for a member of this subgenus, being only a little shorter than the entire body, black throughout; flagellar segments long-cylindrical, with short glabrous apical pedicels; terminal segment subequal in length to the penultimate, strongly narrowed and pale at apex. Head grey, more silvery-grey on front; eyes large, rather broadly contiguous on vertex.

Pronotum dark brown. Mesonotal praescutum more reddish-brown, somewhat darkened behind; scutal lobes dark brown, the median area and the scutellum more testaceous-brown; mediotergite dark brown. Pleura uniformly dark brown, the dorso-pleural region and meron somewhat brighter. Halteres dark brown, the base of stem narrowly pale. Legs with the fore coxae darkened, the remaining coxae more yellowish; trochanters yellow; femora yellow, with a narrow subterminal dark ring, the actual tip a little narrower, yellow; tibiae and tarsi brown; claws small. Wings (Fig. 1) with a uniform brown tinge; stigma very small, subcircular in outline, darker brown; veins brown, macrotrichia conspicuous, black. Venation: Sc₁ ending shortly before midlength of the long Rs, Sc₂ at tip; free tip of Sc₂ and R₂ in transverse alignment; m a little longer and

more arcuated than basal section of M_3 ; m-cu just beyond fork of M; anal veins parallel for almost the entire length of 2nd A.

Abdominal tergites dark brown, the basal sternites more yellowish-brown; terminalia obscure yellow, the outer lobe of dististyle more infuscated. Male terminalia (Fig. 3) with the tergite, *9t*, large, the caudal margin gently emarginate, the low, broad, lateral lobes with long, conspicuous setae. Basistyle, *b*, short, the ventro-mesal lobe conspicuous, at apex armed with three groups of spines and setae, including a low mass of tubercles shortly before apex, an outer apical lobe set with long setae, and an inner apical row of four flattened black fasciculate setae. Dististyle, *d*, single, produced into a long clavate lobe, with very long erect setae; main body of style elongate-oval, at apex drawn out into a straight, slender, spinous point. Mesal-apical lobe of gonapophysis, *g*, a long flattened blade, the apex obtuse.

Holotype, ♂, Onoba, Papua, altitude about 2,000 feet, July, 1935 (K. J. Clinton).

The present fly is readily distinguished from similar small species of the subgenus by the unusually elongate antennae of the male, pattern of the femora and, especially, the structure of the male terminalia.

LIMONIA (LIBNOTES) ONOBANA, n. sp. Fig. 4.

General coloration obscure yellow, the praescutum with a black median stripe that spreads out in front to cover the humeral and lateral portions of the sclerite; halteres yellow; femora obscure yellow, the tips very narrowly clearer yellow, the fore femora with a narrow brown subterminal ring; wings tinged with yellowish-grey, margined with dusky, cells C and Sc more infumed; Sc_1 ending just before fork of Rs; Rs gently arcuated; m-cu just beyond one-third the length of cell 1st m_2 ; anal veins slightly convergent at bases; abdomen black.

♂. Length about 6.5 mm.; wing, 7.5 mm.

Rostrum and palpi black. Antennae black, the outer segments a little paler; flagellar segments oval, with short apical pedicels; terminal segment elongate, about one-half longer than the penultimate. Head dark grey.

Pronotum black. Mesonotal praescutum with the ground-colour obscure yellow, with a median black stripe that is widened in front and extends laterad across the humeral and lateral portions of the sclerite, restricting the ground-colour to broad sublateral areas; at about midlength of the segment, the black stripe sends cephalad a small lateral point or spur, isolating a linear ground dot on either side of the midline; scutum with the median area yellow, the lobes black; scutellum black, paler basally, the parascutella yellow; mediotergite dark, the cephalic portion paler. Pleura obscure yellow, the propleura and a narrow longitudinal stripe across the anepisternum and pteropleurite to and including the pleurotergite, blackened; fore coxae and a small vague area on sternopleurite darkened. Halteres pale yellow throughout. Legs with the fore coxae darkened, as described; remaining coxae obscure yellow; trochanters obscure yellow; fore femora obscure yellow, with a very narrow, brown, subterminal ring, the yellow apical portion a trifle broader than the ring; middle and posterior femora obscure yellow, becoming a little darker outwardly, but without distinct dark annuli, the tips narrowly clearer yellow; tibiae and tarsi yellowish-brown, the terminal tarsal segments blackened. Wings tinged with yellowish-grey; cells C and Sc more infumed, passing into brownish-yellow outwardly; bases of cells R, M, Cu and 1st A slightly darkened; a narrow dusky border around the wing, somewhat more extensive on the apical portions; a tiny cloud at origin of Rs; stigma small,

oval, darker brown; veins dark. Venation: Sc relatively short, Sc₁ ending just before fork of Rs, Sc₂ at tip of Sc₁; Rs gently arcuated; free tip of Sc₂ and R₂ in transverse alignment; inner ends of cells 2nd M₂ and M₃ in transverse alignment; m-cu just beyond one-third the length of cell 1st M₂; anal veins slightly convergent at bases.

Abdomen black, the terminalia only a little brightened. Male terminalia (Fig. 4) with the tergite, 9t, relatively narrow apically. Basistyle, b, long and slender, the ventro-mesal lobe basal in position, provided with long coarse setae. Dorsal dististyle a short curved blackened horn, the tip acute. Ventral dististyle, vd, a small oval lobe, with long setae; rostral blade long and conspicuous, pale, compressed, at apex narrowed into a small spinous point.

Holotype, ♂, Onoba, Papua, altitude about 2,000 feet, July, 1935 (K. J. Clinton).

By Edwards's key to the species of *Libnotes* (*Journ. Fed. Malay St. Mus.*, 14, 1928, 74-80) the present fly runs more or less directly to *Limonia* (*Libnotes*) *trifasciata* (Edwards) of the Federated Malay States, a very different fly. The peculiar structure of the male terminalia is somewhat as in an otherwise entirely distinct species to be described, in a later paper of the series, from Kavieng, New Ireland.

LIMONIA (LIBNOTES) CLINTONI, n. sp. Fig. 2.

General coloration grey; praescutum with a brownish crossband behind the anterior margin, together with two comma-shaped brown spots beyond midlength of the sclerite; fore legs entirely black; wings faintly tinged with yellow, sparsely patterned with brown; free tip of Sc₂ in virtual transverse alignment with R₂; abdomen dark brown, the terminalia brownish-black.

♂. Length about 11 mm.; wing, 15 mm.

Rostrum brownish-black; palpi black. Antennae with scape black, pale at base; pedicel brownish-yellow; flagellum yellow; flagellar segments long-oval, the longest verticil of each subequal in length to the segment; terminal segment about one-fifth longer than the penultimate. Head light grey; anterior vertex reduced to a very narrow strip that is only a little wider than the diameter of a single ommatidium.

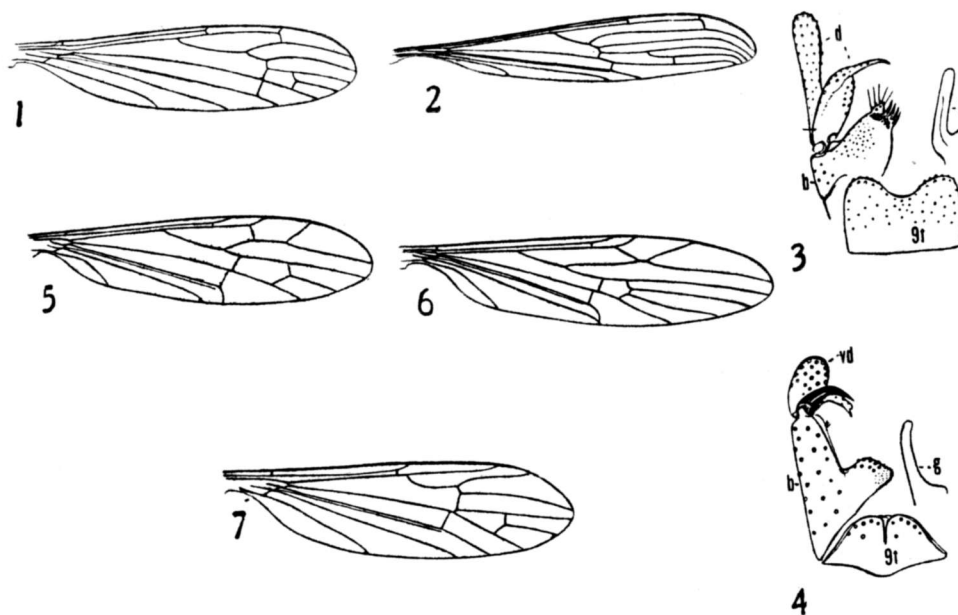
Pronotum reddish-brown, darker on posterior border. Mesonotal praescutum chiefly greyish-pruinose, with a brownish crossband behind anterior margin, continued backward across the humeral and lateral borders to the suture; a pair of intermediate brown dashes, shaped like commas, placed just beyond midlength of praescutum; scutum whitish, the lobes with more greyish centres; scutellum and mediotergite whitish, the latter with a brownish-black lateral line, widened posteriorly. Pleura whitish-grey, with narrow, broken, dark brown, longitudinal lines on anepisternum and pteropleurite, and again across fore coxae and ventral sternopleurite. Halteres with stem yellow, its base infuscated, the knob blackened. Legs with the coxae whitish, the fore coxae marked as above described; trochanters whitish; fore femora entirely black; middle and hind femora brown basally, passing into black at or near midlength; all tibiae and tarsi black; vestiture of legs relatively short and inconspicuous, short and spinous on femora, longer and more appressed on distal segments. Wings (Fig. 2) long and narrow, faintly tinged with yellow, the costal cells more saturated; a restricted dark pattern that is confined to the veins and distributed as small areas as follows: Arculus; origin of Rs; at intervals along cord; outer end of cell 1st M₂; tip of Sc₂ and R₂; at distal ends of veins M₄, Cu₁, 1st A and 2nd A; veins bright yellow,

black in the clouded areas. Venation: Free tip of Sc_2 lying immediately basad of R_2 , so as to appear virtually in alignment with it; cell 2nd M_2 about one-third longer than cell M_3 ; m-cu just beyond one-fifth the length of lower face of cell 1st M_2 ; anal veins convergent basally.

Abdomen dark brown, the basal tergites darker laterally, the intermediate ones further darkened medially at base; terminalia small, brownish-black; sternites paler.

Holotype, ♂, Onoba, Papua, altitude about 2,000 feet, July, 1935 (K. J. Clinton).

This interesting and very distinct *Libnotes* is named in honour of the collector, Mr. K. J. Clinton. It belongs to the *notata* complex of species, being most readily distinguished from all described allies by the extensively blackened legs.



Figures 1-7.

b, basistyle; d, dististyle; g, gonapophysis; t, tergite; vd, ventral dististyle.

1. *Limonia (Limonia) longeantennata*, n. sp., venation.
2. *Limonia (Libnotes) clintoni*, n. sp., venation.
3. *Limonia (Limonia) longeantennata*, n. sp., terminalia.
4. *Limonia (Libnotes) onobana*, n. sp., terminalia.
5. *Trentepohlia (Paramongoma) lucrifera*, n. sp., venation.
6. *Trentepohlia (Mongoma) longisetosa*, n. sp., venation.
7. *Gonomyia (Lipophleps) jurata*, n. sp., venation.

ERIOPTERINI.

TRENTEPOHLIA (PARAMONGOMA) LUCRIFERA, n. sp. Fig. 5.

General coloration of thorax uniformly brownish-yellow; antennae with scape yellow, pedicel and flagellum brown; legs pale brownish testaceous; wings pale yellowish-grey, unmarked; veins pale; macrotrichia of veins very reduced in number; R_{2+3+4} subequal to R_{3+4} alone, both a little longer than R_2 .

♀. Length about 3.8 mm.; wing, 3.7 mm.

Rostrum and palpi brownish-yellow. Antennae with the scape yellow; pedicel and flagellum brown; flagellar segments suboval, the verticils short. Head brownish-yellow.

Mesonotum and pleura almost uniformly brownish-yellow, without distinct markings. Halteres pale. Legs with the coxae and trochanters yellow; remainder of legs pale brownish testaceous, the tarsi a little paler, dirty white. Wings (Fig. 5) pale yellowish-grey, unmarked; veins pale. Macrotrichia of veins virtually lacking, there being two or three on vein R_1 near stigmal region and two or three scattered trichia on distal section of vein R_5 . Venation: R_{2+3+4} subequal to R_{3+4} , both a little longer than R_2 ; cell 1st M_2 elongate, exceeding vein M_{1+2} beyond it; m-cu just before fork of M; distal section of Cu_1 subequal to m-cu and about equal to the space along wing-margin between veins Cu_1 and 1st A.

Abdominal tergites brown; sternites paler brown.

Holotype, ♀, Onoba, Papua, altitude about 2,000 feet, July, 1935 (K. J. Clinton).

Trentepohlia (*Paramongoma*) *lucrifera* is allied to species such as *T. (P.) banahaensis* Alexander, *T. (P.) chionopoda* Alexander and *T. (P.) pusilla* Edwards, differing from all in the venation, especially the subequal veins R_{2+3+4} and R_{3+4} , the latter exceeding in length vein R_2 alone.

TRENTEPOHLIA (MONGOMA) LONGISETOSA, n. sp. Fig. 6.

General coloration dark brown; legs brownish-black, the outer tarsal segments paling to dirty yellow; tarsi short, especially the posterior pair in male; all femora with short spines at base; wings strongly tinged with dusky; costal fringe (♂) long and conspicuous; vein R_3 oblique, cell R_2 at margin exceeding one-half the extent of cell R_3 .

♂. Length, 5.5–6 mm.; wing, 6–7 mm. ♀. Length, 6.5–8 mm.; wing, 6.5–8 mm.

Rostrum and palpi black. Antennae black throughout; flagellar segments subcylindrical; longest verticils subequal in length to the segments. Head brownish-black.

Thoracic dorsum and pleura uniformly dark brown, the dorsopleural region and pronotum even darker in colour. Halteres dusky. Legs brownish-black, the outer tarsal segments paling to dirty yellow; tarsi short, especially the posterior tarsi in male (femora, 8 mm.; tarsi, 5.3 mm.), which are much shorter than the femora; femora with several (12–15) short black spines at base. Wings (Fig. 6) with a strong dusky tinge, the wing-tip narrowly more darkened in outer radial field; stigma small and inconspicuous; cells C and Sc more yellowish-brown; veins brownish-black. Costal fringe (♂) unusually long and conspicuous, exceeding in length the width of cell 1st M_2 at base; in female, costal fringe dense but short and normal. Venation: Basal section of R_5 relatively long, exceeding two-thirds of R_3 ; R_{2+3+4} gently sinuous, exceeding R_3 ; vein R_3 much more oblique than in *brevipes*, cell R_2 at margin exceeding one-half the extent of cell R_3 ; R_{3+4} only about one-third to one-half R_2 ; cell 1st M_2 short, the veins and cells beyond it correspondingly lengthened.

Abdominal tergites and terminalia brownish-black; sternites brown, the caudal borders of the segments narrowly darkened.

Holotype, ♂, Maini, Papua, altitude about 6,300 feet, July, 1935 (K. J. Clinton). Allotopotype, ♀. Paratopotypes, 4 ♂, ♀. Paratypes, 1 ♂, 1 ♀, Kone, Papua, altitude about 5,000 feet, July, 1935 (K. J. Clinton).

By my key to the regional species of *Trentepohlia* (Proc. Linn. Soc. N.S.W., lx, 1935, 66), the present fly runs to *Trentepohlia* (*Mongoma*) *brevipes* Alexander (New Britain, New Guinea), which shows several features in common, as the darkened femora and tibiae and the shortened tarsi, but is very different in the

pattern and venation of the wings and in the short costal fringe of the male sex. In the long costal fringe of the male, the present fly agrees with *T. (M.) costofimbriata* Alexander (New Britain), a species with entirely different leg-pattern.

TRENTEPOHLIA (PLESIOMONGOMA) NOVAE-BRITANIAE Alexander.

PROC. LINN. SOC. N.S.W., lx, 1935, 66-67.

1 ♀, Maini, Papua, altitude about 6,300 feet, July, 1935 (K. J. Clinton).

TRENTEPOHLIA (TRENTEPOHLIA) PICTIPENNIS Bezzi.

Philippine Journ. Sci., xii, D, 1917, 115.

Inawi, Papua, July, 1935 (K. J. Clinton).

GONOMYIA (LIPOPHLEPS) JURATA, n. sp. Fig. 7.

General coloration of mesonotum dark grey, the scutellum light yellow, with a dark spot medially at base; antennae with pedicel large, bright orange; mesopleura dark brown, scarcely variegated by brighter; knobs of halteres dusky; legs black; wings with a strong brown suffusion, the costal border narrowly yellow; macrotrichia of veins numerous; Sc_1 ending opposite origin of R_s ; abdomen black.

♀. Length about 4.5 mm.; wing, 4.2 mm.

Rostrum and palpi black. Antennae with scape obscure orange; pedicel enlarged, bright orange; flagellum black throughout; flagellar segments oval, the outer ones more elongate-oval; terminal segment shorter than the penultimate. Head grey.

Pronotum above obscure brownish-yellow, the pronotal scutellum brighter yellow. Mesonotal praescutum and scutum dark grey, the pseudosutural foveae dark; humeral and lateral portions of praescutum not or scarcely brightened; scutellum light yellow, with a darker median spot at base; mediotergite grey. Pleura dark brown, scarcely variegated by brighter. Halteres obscure yellow, the knobs dusky. Legs with the coxae yellowish-brown; trochanters a little brighter; remainder of legs black. Wings (Fig. 7) with a strong brownish suffusion; cells C and Sc yellow. Macrotrichia of veins relatively abundant, including a series on distal two-thirds of vein 1st A and a few on outer end of vein 2nd A. Venation: Sc_1 ending opposite origin of R_s , Sc_2 close to its outer end; R_s long, arcuated; basal section of vein R_5 long, approximately one-half r-m; m-cu shortly before the fork of M.

Abdomen black, the bases of the terminalia brownish-black; cerci horn-yellow.

Holotype, ♀, Onoba, Papua, altitude about 2,000 feet, July, 1935 (K. J. Clinton).

Gonomyia (Lipophleps) jurata is generally similar to species such as *G. (L.) fijiensis* Alexander and *G. (L.) kerteszi* Alexander, yet is very distinct in all details of coloration, especially of the legs, wings and abdomen.